Pittsburgh

**Crime vs Social Conditions (correlations)**

Contents

[HYPOTHESYS 1](#_Toc37257791)

[DATA SOURCES: 2](#_Toc37257792)

[STRATEGY 3](#_Toc37257793)

[WHICH STATISTICAL TEST TO USE 3](#_Toc37257794)

[METRICS: 4](#_Toc37257795)

[ASSEMBLE AND CLEAN 5](#_Toc37257796)

[RETRIEVE DATA 5](#_Toc37257797)

[BUILD RETRIEVAL PLAN 5](#_Toc37257798)

[ANALYZE FOR TRENDS 5](#_Toc37257799)

[ACKNOWLEDGE LIMITATIONS 5](#_Toc37257800)

[MAKE A CALL OR TELL STORY 5](#_Toc37257801)

[RESOURCES 5](#_Toc37257802)

# Context

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Researches have considered and measure Social and Economic factors like Income, Health, Education, Family live, Housing, progress on industrialization, urbanization etc. Based on this study those variables are important factors that lead a person to commit a Crime. Even though some researches have said that these factors influence rates of crime, there are others that for whom this result is not clear. In order to understand better the issue and later as a Society prevent Crime raising levels in our cities. We are going to analyze the relationship with those factors and find out their impact in Crime level in our Cities. The following data analysis is going to find out how Social and Economic factors has been influencing or not, the rates of Crime in US and in the City of Pittsburgh PA during the 2014 and 2015 in US. We are going to take in consideration the levels and rates of Population, Education, Income, House Contract, and House Value to identify some insights, patterns or trends about this social phenomenon. Also, we can compare which of them has better impact on decreasing the crime levels.

Finally approve or dis approve this hypothesis.

# Describe the core message or hypothesis for your project

Crime violence has been always a Social Issue that we want to get rid of but not always we have got success on it. A person commits a crime or an offence because many reason or factors. What can we learn from the past about those factors to prevent or decrease Crime Levels? , How an Economic and Social factor like Income or Education level have or not contributed to increase or decrease the Crime levels?, can we statistically test it?. Our outputs can support making decisions as Society or Individually?

HYPOTHESYS:

Social & Economic conditions influence Crime rate levels.

Null Hypothesis:

If the population’s Social and Economic conditions (Income, Education) get better, then Crime’s rate level will decrease.

because schooling significantly reduces the probability to commit a crime and be arrested.

because income (money in your pocket) reduces the probability to commit a crime and be arrested.

# Describe the questions you and your group found interesting, and what motivated you to answer them

Income

As a society or individual, we assume based on several research that Income Factor plays an important role in increasing Crime levels. We know that Poverty, Unemployment and other Economic factor like these affect the person or family’s Income. These factors have been mentioned by studies as the most frequent reason to commit a Crime. Our challenge will be to find how strong is the relationship between Income factor and Crime Level and measure it's impact in our Society.

Education got many benefits for an individual or a society. Some studies have shown that Education reduce poverty, so in consequence we assume that it could increase the Income and reduce Crime levels. Researches in US have stablished that by increasing the high school graduation rate as a result the Crime levels have decreased. We want to know how strong is the relationship between Education factor and Crime Level, and measure it’s impact against crime rate over a period of time.

Can we stablish relationships between Economic, Social Factors and Crime Levels and get some insights about this Social problem? What can we learn from the past to correct or improve this issue from the future? Can we use the outputs founded to contribute for decision making support? We believe that then answer is yes, so finding out the following:

* How strong is the relations ship between **Income factor** and Crime Level?
* How strong is the relations ship between **Education factor** and its influence in Crime prevention?
* Can we test which is the most important factor between **Income and Education against Crime**?
* Based on output we can make a decision what city require to improve economy to prevent crime?
* Base on output a person can make a decision about where to live base on the economic and education factor?

# Summarize where and how you found the data you used to answer these questions

Data was collected from Public PA State US Site and Data gov US Site.

**Data Sources and Link:**

[**https://catalog.data.gov/dataset/pittsburgh-american-community-survey-2014-miscellaneous-data**](https://catalog.data.gov/dataset/pittsburgh-american-community-survey-2014-miscellaneous-data)

**file: educational-attainment-for-the-population-25-years-and-over\_2014**

**file:** **P\_aggregate-household-income-in-the-past-12-months-in-2015-inflation-adjusted-dollars\_ok**

**file: self-employment-income-in-the-past-12-months-for-households\_2014**

[**https://data.wprdc.org/dataset/pittsburgh-american-community-survey-2015-miscellaneous-data**](https://data.wprdc.org/dataset/pittsburgh-american-community-survey-2015-miscellaneous-data)

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[**https://data.wprdc.org/dataset?q=police&page=1**](https://data.wprdc.org/dataset?q=police&page=1)

**File:** **Police Incident Blotter (Archive)**

[**https://en.wikipedia.org/wiki/Pittsburgh**](https://en.wikipedia.org/wiki/Pittsburgh)

**Population 2014,2015**

# Describe the data exploration and cleanup process (accompanied by your Jupyter Notebook)[¶](http://localhost:8889/notebooks/Documents/ITESM_DA/Project_new/Project1/Crime%20in%20US.ipynb#Describe-the-data-exploration-and-cleanup-process-(accompanied-by-your-Jupyter-Notebook))

Based on the data Analysis objective, we had to look for data sets related Crime data and Social and economic measures at US and State level.

Clean Process and Integration process include:

Steps to split columns, rename columns, remove or create new columns

Steps to Integrate data set:

Crime and income by year.

Crime, income, education by neighborhood and year.

Create a df frame that includes income, education and some comparative measures between 2005-2015, and 2014-29015 by neighborhood year.

# DATA SOURCES:

**Data Sources:**

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**Population 2014,2015**

# STRATEGY

* Understanding the crime in PA- Pittsburg.
  + Get total offences by year, graph it in a line chart.
  + Get total offences by neighbor, graph in a bar chart
  + Get the offence quantity & proportion by year.
  + Get the neighbor/ crime quantity & proportion by year
  + Get the top 5 neighbor increase or decrease crime offences all years.
  + Ge some conclusions.
* Where we are on e**ducatio**n levels in PA- Pittsburg.
* Compare Education levels 2014 & 2015
  + Get total of educated people by City and Neighbor.
    - Run Central tendency statistics.
    - Get some proportions.
  + Get the total count of educated people by level (Hight School, College etc)
    - Run Central tendency statistics.
* Get a summary table to compare the Central tendency measures of education.
* Get some conclusions.
* How strong is the relationship (correlation) between Education and Crime in PA- Pittsburg?
  + Get a correlation between number of incidents vs total educated people by City (plot scatter) for 2014 and 2015 (two graphs), compare.
  + Get some conclusions.
* Conclusions.
  + Based on statistical test can we reject the null hypothesis, or we fail to reject it.

## WHICH STATISTICAL TEST TO USE

|  |  |  |
| --- | --- | --- |
| DATA TYPE | SAMPLE | PURPOSE |
| House Income: Interval  Housing unit Value: Interval  Renting: Interval  **Education: Interval**  Crime offences: Interval  by neighbor: | Data sets for 2014 & 2015 | Find if Social and Economic factors increase the Crime Level; relationship between and independent variable (Employment, Income, House Pricing, House Renting) and dependent variable (Crime Level) |
|  |  |  |
| House Income: Interval | House Income: Interval  Crime offences: Interval | H0: if we increase house income then crime offences will decrease  **Central tendency**  **Correlation** |
| Housing unit Value: Interval | Housing unit Value: Interval  Crime offences: Interval | H0: if we increase the Housing unit Value then crime offences will decrease.  **Central tendency**  **Correlation** |
| Renting: Interval | Renting: Interval  Crime offences: Interval | H0: if we increase the Renting Value then crime offences will decrease. |
| **Education: Interval** | Education: Interval  Crime offences: Interval | H0: if we increase the Education level then crime offences will decrease.  **Central tendency**  **Correlation** |

# METRICS:

**File: Police Incident Blotter (Archive)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **year** | **INCIDENTLOCATION** | **INCIDENTNEIGHBORHOOD** | **INCIDENTZONE** | **HIERARCHYDESC** | **OFFENSES** |
| **Count of offences by** | **x** |  | **x** |  | **x** | **x** |
| **Total offence/percentage** |  |  | **x** |  |  | **x** |

**File: educational-attainment-for-the-population-25-years-and-over (2014 & 2015).**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **year** | **Neighbor** | **High School** | **GED** | **college, less than 1 year** | **Some college, 1 or more years, no degree** | **Associate degree** | **Bachelor's degree** | **Master's degree.**  **Professional school degree.**  **Doctorate degree.** |
| **Count of educated people by** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |

# ASSEMBLE AND CLEAN

# RETRIEVE DATA

# BUILD RETRIEVAL PLAN

# ANALYZE FOR TRENDS

# ACKNOWLEDGE LIMITATIONS

# MAKE A CALL OR TELL STORY

# RESOURCES

<https://law.jrank.org/pages/11999/Causes-Crime-Social-economic-factors.html>

<http://store.ectap.ro/articole/873.pdf>

<http://www.iosrjournals.org/iosr-jhss/papers/Vol.%2021%20Issue9/Version-6/C2109061821.pdf>